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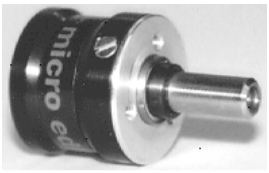
Effektive Präzisionsantriebe für den Elektroflug



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Operating instructions and security notes for the electrical flight gear

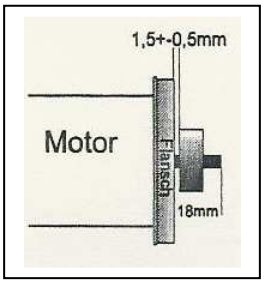
Edition SUPER CHIEF

This gearbox has been developed by us for the special requirements of the electric flight. So far unrivaled performance at low weight and compact dimensions is the result. Thanks to various flanges **SUPER CHIEF** is with almost all available electric motors on the market combinable. Up to 5-mm shaft diameter motor shafts must generally not be shortened. This means that the usability for operation in direct-drive remains fully intact. This gear allows you to use the high power of modern, compact motors.
High, for direct drive unsuitable speeds are reduced in the ratio. At the same time multiplies the torque, making the use of large, efficient propellers possible. As motors can now be operated in the best efficiency, you have already with lower cell counts fantastic flight results.

If you have received from us a complete drive:
It will usually come in two parts: motor and gearbox separately. This is deliberate so that removing and installing will not be a secret, which will help when using and carrying out maintenance. The unit was previously installed and adjusted by us and had a test run on the test bench. Bring motor and gear gently together and turn it clockwise.
Inrunner: Assemble GRP frame or even better, pinch our T-key in a vice and tighten the motor hard with both hands.
Outrunner: Clamp the motor output flange carefully in the bench vise (for RS motors are available matching U-frames), then tighten the gear with our T-key.

PLEASE NOTE:
When FRAME fixing (on front face, on the gearbox output flange): acts while **accelerating an on rotating torque** and while **braking an off rotating torque** on the gear-motor-connection.
When fixing with MOTOR CLAMPS or EAR FLANGES (not on front face): acts while **accelerating an off rotating torque** and while **braking an on rotating torque** on the gear-motor-connection.
THE MOTOR MAY itself unscrew off the gear, when it is not securely tightened.

For high performances it may be useful to use a liquid securing mean as „Loctite 222“ (but first decrease the threads necessarily). **Don´t use in any case** the enclosed Loctite 648 for pinion assembly! **The connection would be indissolubly!**
If you want to assemble the gear yourself to a motor:
Control motor pinion diameter:
Gear reduction 4:1 = 12,1mm, 5:1 = 9,47mm, 6:1 = 8 mm, 7:1 = 6,61mm, 8:1 = 5,8mm
Please don´t put the motor shaft „trial basis„ into the gear, because our extremely affixable high performance grease is even with acetone nearly not removable and obstructs the later bond.
Screw the flange on the motor and tighten it well. The now of the flange out sticking motor shaft may stick out with a diameter up to 5mm max. 18mm (with a diameter bigger than 5mm you must shorten to 11,5mm) – goes great with the small blades, for which are available mini tools – to shorten the motor shaft, stuck it with a plastic bag to protect the motor from sanding dust. After deburring the motor shaft, rough up the smooth motor shaft, degrease the motor shaft and pinion (e.g. with acetone). Put on some Loctite 648 (no superglue!) on pinion bore and shaft.



Now turn up the pinion on the shaft, until it floats on an evenly film. The correct distance between the motor pinion toothing to the flange thread is **1,5mm** (+/-0,5). After **10 minutes** rev up the motor in idle to throw off unnecessary Loctite, because cured residues between the teeth flanks lead to gear rattle. Clean the flange of processing residues and after approx. 30 minutes the gear can be screwed on the motor as described above.
After creating a small test voltage (e.g. receiver battery), the unit should run smoothly with fixed rotated, and a rotation dissolved gear.
The relatively high resistance to rotation by the cold and rigid high performance grease reduces after a short running time significantly! With our in long trials selected high performance grease, in normal operation occurs almost no metal contact in the gear anymore. But when starting or braking, the fat boundary can be broken. Therefore switch on slowly only with controller to 2-3 sec. High rules. When braking (watch on controller with soft brake), first remove the gas and then decelerate slowly.

MAINTENANCE – GREASING – CLEANING
The maintenance of the SUPER CHIEF gearbox is limited to **occasional cleaning and greasing of the planet wheels with the inner needle bearings and the three axes of the planet gears**, but only with our high performance grease (maximum 3-4 pea-sized portions, in ungreased gear). Too much grease leads to warm up the gear! Please clean the gear mechanically. When cleaning with solvent e.g. acetone, you necessarily have to avoid that the solvent reaches the output bearings. (Solvent would dissolve the grease in the output bearing – result: bearing damage!)
Pinion Removal
Motor pinion can be released with a small puller by warming up to 300° C. For this small gas soldering equipment or a hot air dryer with a small nozzle are suitable. (Caution – don´t damage the motor bearing).

Safety instructions
For programming transmitter or controller necessarily remove the propeller! Drive unit with assembled propeller (only outside!) regulate up slowly in 2-3 seconds and decelerate slowly. Always when connecting the flight battery and picking up the model avoid the turning circle of the propeller – risk of injury!
Make sure that there are no persons in front or beside the running propeller! Check the propeller after each landing for damage and tight fit! Use the stop nuts of the propeller just once! Too loosely screwed gears can loosen during operation! Use possibly releasable screw securing means, such as Loctite 222. Check more often the three frame fitting screws on tight fit, as well as the connection hub to gear shaft. Attention: **On rotating moment while accelerating!** (for frame assembly)
For liability- and consequential damages while operating by and with our products we cannot come up, because a proper operation or use cannot be monitored by us.
Attention: Maximum immersion depth of the 3 front fixing screws = 8mm
Exceeding this length, the planet carrier can be blocked or destroyed!

Technical data
Weight: SUPER CHIEF 4:1 = 76g, 5:1 = 78g; 6:1 = 82g, 7:1 = 84g, 8:1 = 86g (without pinion and flange) diameter 38,5mm – length: 27mm (without shaft and flange to frame pad) output shaft: 6x7 (one part: shaft and planet carrier) of high-strength titanium max. torque transmission – maximum torque short 10Nm – maximum performance throughput (to 10 min.) approx. 3000 watts – permissible temperature range: -20°/+100°C, maximum input rotation speed by high performance in short-time operation at 4:1 – 40.000 rpm, at 6:1 – 50.000 rpm, Outlet shaft is supported in a large-scaled, double-rowed ball bearing (to accommodate traction- and thrust power) – planet wheels nail mounted.